CALIFORNIA ENERGY COMMISSION
1516 NINTH STREET
SACRAMENTO, CA 95814-5512

December 28, 2001

Mr. Samuel Wehn, Project Director
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Roseville Energy Facility, LLC
101 California Street, Suite 1950
San Francisco, CA 94111

Mr. Wehn,

ROSEVILLE ENERGY FACILITY (REF) SOIL & WATER DATA REQUESTS

Pursuant to Title 20, California Code of Regulations, section 1716, the California Energy Commission staff requests the information specified in the enclosed data requests. The information is necessary to: 1) more fully understand the project, 2) assess whether the facility will be constructed and operated in compliance with applicable regulations, 3) assess whether the project will be constructed and operated in a safe, efficient, and reliable manner, and 5) assess potential mitigation measures.

This set of data requests (#105 – 156) is being made in the areas of: Soil and Water Resources. Written responses to the enclosed data requests are due to the Energy Commission staff on or before January 29, 2002 or at such later date as may be mutually agreed.

If you are unable to provide the information requested, need additional time or object to providing the requested information, you must send a written notice to both Commissioner Robert Laurie, Presiding Member of the Committee for the REF proceeding, and to me, within 10 days of receipt of this notice. The notification must contain the reasons for not providing the information, the need for additional time and the grounds for any objections (see Title 20, California Code of Regulations section 1716 (e)). Staff requests that the responses be sent together in one complete document rather than fragmented.

If you have any questions regarding the enclosed data requests, please contact me at (916) 653-1227 or e-mail lshaw@energy.state.ca.us.

Lance Shaw, Siting Project Manager

Enclosure:

cc: POS

Technical Area: Soil and Water Resources
Authors: Greg Peterson, Kenneth Schwarz, Ph.D., and Richard Sapudar

BACKGROUND

Appendix Figures A-1 and A-2 show preliminary heat and mass balances for alternate Combustion Turbine Generator/Steam Turbine Generator configurations (at 75F, 39 % relative humidity, 59F wet bulb). These are on a different basis than the annual average (62.1F dry bulb/53.4F wet bulb, 95% load) or the "maximum day" (114F dry bulb/62F wet bulb, 100% load) conditions used in Figures B-1 and B-2, and from the dry bulb temperatures (16F, 60F, and 115F) used to compute air emissions in Section 3.4.4.5. Cooling systems are normally based on wet bulb temperatures that are equaled or exceeded 10, 5, 2.5, or 1% of the summer hours. McClellan Industrial Park has ASHRAE (Association of Sheetmetal, Heating, Refrigeration, and Air Conditioning Engineers) 90, 95, 99% reoccurrence summer wet bulb temperatures of 67, 69, 70, & 72F, and 92, 96, 99, & 102F dry bulb temperatures.

DATA REQUEST

105. Please explain how the various weather criteria were selected, which values were used to develop the water balance for the project, and why ASHRAE criteria were not consistently used?

BACKGROUND

Section 3.4.1 of the AFC states that the facility will have a net heat rate of 7,183 British thermal units/kilowatt hour, and a 47.5 percent overall thermal efficiency at optimum conditions, but does not define the optimum condition, percent load, or wet bulb temperature. Net heat rate and overall thermal efficiency at non-optimum conditions, such as those used in the various energy and water balances are not stated.

DATA REQUEST

106. Please discuss in detail the project water balance as it is related to the heat and mass balances, net heat rate, and overall thermal efficiency for a consistent set of low/average/peak conditions, such as ASHRAE criteria described above, with and without supplemental firing.

BACKGROUND

Appendix Figures A-1 & -2, B-1, -2, & -3 of the AFC contain discrepancies regarding criteria presented in these figures compared to various tables and text.

DATA REQUEST

107. Include the make-up water pumps (labeled in Figure A-1 & 2 text as 55-PU-001A, B) in Figures A-1 & 2, and the PGWWTP make-up water.

BACKGROUND

The following table generated by CEC staff contains parameters that are not used consistently by the Applicant throughout the AFC.

DATA REQUEST

108. Please clarify which of the values in the following table are correct. If there is a qualifying basis to justify the use of different parameters in different sections, fully explain this basis.

Process Parameter	**First reference**	**Value**	**Other reference**	**Value**
Combustion Turbine Output	3.4.1, 3rd paragraph	167 MW	Table 3.4.1-1	174 MW Gross Output
Steam Turbine Output, 2x1+ 1x1 configuration	Figure A-1	301 MW	Table 3.4.1-1	307 MW
Inlet Air Cooling System Water Source	Figure A-1 & 2	Dechlorinated potable water	3.4.8.4.2	PGWWTP + ZD reclaimed water
Zero Liquid Discharge Wastewater Treatment System flow basis	Table 3.4.1-1	900 gpm	Figure B-3 Section 3.11.5	511 gpm 760 gpm
Supplemental gas supply rate to 300 MW STG, 2x1+ 1x1 configuration	Figure A-1	18 KPPH (should this be 36 KPPH, to complete gas mass balance?)		

MAJOR EQUIPMENT ITEM				
Process Equipment Item	**First reference**	**Value**	**Other reference**	**Value**
Make-up Water Storage Tank, 55-TK-001	Figure A-1 & A-2	2,300,000 gal	Table 3.4.1-1	5,600,000 gal
Aqueous Ammonia Storage Tank, Size	Figure A-1 & A-2	50,000 gal	Table 3.4.1-1	3 @ 50,000 gal/ea
Aqueous Ammonia Storage Tank, Number	Figure A-1 & A-2, Site Plan D-2070-2010	One tank	Table 3.4.1-1	3 tanks
Fire Water Pump Skid Pumps	3.4.12.1	One 400 Hp electric, one 400 Hp diesel	Table 3.4.1-1	2 diesel pumps, 1500gpm ea, one 50gpm jockey
Cooling Water Pumps, 50-PU-101 A,B,C 50-PU-201 A,B,C 50-PU-301 A,B,C	Figure A-2, description (similarly for Figure A-1)	60,000 gpm/each (2 of 3 pump set normally run)	Figure A-2, diagram (similarly for Figure A-1) Table 3.4.8.1, footnote 7	These pumps appear to be labeled as 50-PU-001A,B,C 290,000gpm circulating flow
Drum Condensate Pumps, 31-PU-101A,B,C &	Figure A-2, description (similarly for Figure A-1)	2000 gpm/ea	Figure A-2, diagram (similarly for Figure A-1)	These pumps are labeled as 50-PU-001A,B,C

31-PU-301A,B				
HP/IP HRSG FW Pumps, 20-PU-001A,B,C,D	Figure A-2, description (similarly for Figure A-1)	1000 gpm/ea	Figure A-2, diagram (similarly for Figure A-1)	These pumps arelabeled as 20-PU-301A,B
Auxiliary Cooling Water Pump	Fig A-2, (similarly for Fig A-1)	Shown, but not labeled		
Cooling Towers, concentration cycles	Figure A-2 (similarly for Figure A-1)	10 cycles	3.4.8.5.1 Figure B-1&2 water balance	Up to 8 cycles Shows 7 cycles of concentration.

BACKGROUND

It is important that staff completely understand the recycled water supply relative to the water needs of the project so that supply and demand may be determined. In Section 3.4.8.1 of the AFC, the proposed make-up water demand will average 4.8 million gallons per day (MGD)/3,300 gallons per minute (gpm) on an annual basis at 95% availability. Pleasant Grove Wastewater Treatment Plant (PGWWTP) effluent will vary seasonally and diurnally, and in AFC Section 5.14.1.2 is anticipated to average 6MGD (4167 gpm) during dry weather, or significantly less that the projected REF peak demand of 9.4MGD (6,500 gpm) for a 24 hour “maximum day”.

DATA REQUEST

109. Please provide the past five years of historic data showing applicable seasonal and diurnal flows which are currently directed to other Waste Water Treatment Plant (WWTP), and that will go to PGWWTP when it is operational. Provide data for the 10 lowest days and 3 lowest weeks. Please define minimum, average, and maximum “design” PGWWTP flow. Will this flow be increased or decreased by the PGWWTP tertiary treatment processes? Quantify how this flow will change, either up or down, over the next 5 years?

110. Please provide Dry Creek WWTP effluent total dissolved solids (TDS), bicarbonate, as well as soluble and total nitrogen (all forms), phosphorous, and other organic and metal constituents monitored for the past 3 years.

111. Please describe the target constituents for which the PGWTTP tertiary treatment processes are designed? What chemicals will be added in these tertiary processes? Will PGWWTP treat the entire secondary effluent or just enough of the flow required to fulfill REF make-up requirements?

112. Please describe how the PGWWTP tertiary effluent will be monitored and measured for adequate water quality for the proposed use at REF.

BACKGROUND

The water balance is sensitive to unanticipated quantity or quality at each point in Figure B-1 and B-2 flow diagrams. Make-up water quantity and quality from the PGWWTP, cooling tower blow-down, plant drainage, and various internal recycle/waste streams from the wastewater treatment system can vary.

DATA REQUEST

113. Please identify the key water constituents that will be monitored (e.g. silica, phosphate, ammonia, etc) for streams entering the water system as well as internal streams.

114. Is water quality monitoring proposed by continuous real-time monitors or with grab samples? Please describe the control system (or procedure) that would be initiated if a stream does not meet discharge limits.

BACKGROUND

Section 5.5.1 indicates that there are five existing City of Roseville wells, two being contaminated, one thought to be threatened with contamination, and two available for emergency City use. Section 5.5.1.1.1 indicates that the Wastewater Holding Tank volume is planned to supplement PGWWTP flow to fulfill REF make-up demand during extreme days. Although based on the projected shortfall discussed above, this storage tank may only be able to supplement REF peak demand for 0.7 to 1.5 extreme 24 hour days, depending on the actual size of the Wastewater Holding Tank (see below discussion, regarding conflicting criteria for the Wastewater Holding Tank).

DATA REQUEST

115. Will any of the five City of Roseville wells be used to provide emergency make-up water for REF, under what conditions will this occur, and what quantities of this water would the project use? Define an “emergency” or any other situation where freshwater, to include groundwater, surface water, or potable water would be used to supplement the recycled water supply needs of the project. Discuss in detail the sources and amounts of any such additional freshwater needs of the project that could be used for other than fire water supply, potable, and sanitary purposes.

116. Would treated water from any of the contaminated wells be used as an alternative water source to reduce the size of the Wastewater Holding Tank and/or the “maximum day” REF make-up rate from the PGWWTP tertiary processes. Provide a map with the locations of the five wells relative to the project, and indicate which wells are contaminated.

BACKGROUND

In AFC Section 3.4.8.1, Table 3.4.8-1, the average REF total make-up water demand from PGWWTP is said to increase from a 3,276 gpm annual average (at 62.1F dry bulb/53.4F wet bulb, 95% load) to 6,492 gpm for a 24 hour maximum day (at 114F dry bulf/62F wet bulb, 100% load).

DATA REQUEST

117. Please define the water balances associated with these conditions, whether there is supplemental firing, and if there are other appropriate criteria defining each make-up rate.

BACKGROUND

Section 3.4.8.4.1 of the AFC indicates that the PGWWTP is expected to have very low total dissolved solids (approximated at 1 ppm TDS). Plant wide make-up filtration is included as a contingency in case of PGWWTP upsets or failures caused by foreign material in the system.

DATA REQUEST

118. Please describe the unit processes used to reduce the 422 ppm TDS contained in the PGWWTP tertiary water in AFC Table 3.4.8-2 to the 1 ppm TDS described in AFC Section 3.4.8.4.1. Please describe the makeup filtration process, how backwash will be accomplished, and what chemical coagulants will be used.

BACKGROUND

In footnote 4, AFC Table 3.4.8-1, the required tank working volumes for the Raw Water Storage and Wastewater Storage tanks, are said to be 520,000 and 45,000 gallons, respectively. However, in Section 3.4.8.1, the PGWWTP effluent is described as being 3.4 million gallons per day (MGD) less than the REF maximum day demand.

DATA REQUEST

119. Please define the projected working volume basis for the Raw Water Storage and Wastewater Storage tanks. Are these tanks intended to dampen daily fluctuation in reclaimed wastewater quality as well as to control the flow rate? If so, how?

120. How will odor and algae be controlled in these tanks? Will either tank be mixed during storage? If so, please explain.

BACKGROUND

Available wastewater from the Pleasant Grove Wastewater Treatment Plant will be used for process and cooling make-up, representing the greatest water needs of the REF (Figures B-1, B-2).

DATA REQUEST

121. Please provide a copy of a “Will Serve” letter formally acknowledging a long-term commitment on behalf of the City of Roseville and the PGWWTP to supply the REF with both recycled wastewater and potable water. This letter should state the quantities of both recycled, potable, or other fresh water to be provided, the length of time this water will be supplied, any conditions to be met by the REF to receive this water, and any restrictions on the use of this water by the REF.

BACKGROUND

AFC sections 3.4.4.4 & 3.4.5 state that steam turbine and condenser efficiency and low back pressure are essential to maintain the design power production rate. Condenser metallurgy and cleaning management are vital parts of the facility operating procedures and will result in a wash water that may be contaminated with heavy metals, such as copper.

DATA REQUEST

122. Please describe the anticipated condenser cleaning frequency, method, wash water volume, and wash water constituents. How will this wash water be treated or disposed?

BACKGROUND

High cooling tower cycles of concentration will help reduce water demands and reduce reliance on fresh inland water sources, which is consistent with State Water Resources Control Board Policy 75-58. The water balances shown in Figures A-1, A-2, B-1, and B-2 include optimistic treatment assumptions, including; no microfiltration process before reverse osmosis (RO), 90% RO recovery rate, no pressure filter backwash, no weak acid cation polisher regeneration/backwash, and no allowance for RO chemical mix/dilution water.

DATA REQUEST

123. Please describe assumed treatment parameters and allowances that were made for non-optimum operating conditions. Describe the impact on the site water balance for a range of operating parameters, including, but not limited to;

    a. The water balances shown in Figures A-1 and A-2 indicate 10 cooling tower cycles of concentration, yet Section 3.4.8.5.1 and Table 3.4.8-4 and Figures B-1 and B-1 are based on 8 cycles of concentration. As low as 5:1 cycles are a reasonable “worst case” scenario if scaling or corrosion problems persist. Please provide water balances for a range of 5 to 10 cycles of concentration.

    b. Please explain why microfiltration or ultrafiltration is not provided upstream of the RO process (as has been proposed at other CEC facilities using reuse water). A single silica analysis indicates 15 ppm silica, but dissolved silica, normally measured by silt density index (SDI), is unstated. Since the feed may have a number of difficult constituents (high SDI, phosphate, magnesium, and boron), why isn’t a lower RO recovery rate on the order of 70 to 80% typically associated with other tertiary effluent projects used as the RO recovery rate? What contingency is planned if the assumed RO recovery rate is not achieved?

c. What will be the source of filter backwash, softener regeneration water, weak acid cation polisher regeneration/backwash, RO chemical mix/dilution water, and area washdown water? What are the normal and maximum flows? If treated water is recycled, were the internal processing rates increased accordingly?

d. What is the anticipated tankage, brine concentrator, decarbonation tower, and evaporator down time? How is the site water balance managed during such an outage?

BACKGROUND

The “24 hour maximum day” water balance would appear to control the wastewater process design criteria, but it is not stated for how long this condition could be managed with the proposed storage tank volumes.

DATA REQUEST

124. Please define the basis of the design water balance, peaking factor, all recirculation flows, allowances for maintenance and wash down/cleaning, standby equipment, and assumed storage tank accumulation/depletion rates for the week of lowest anticipated PGWWTP flow based on historic flows that will be directed to the PGWWTP once it begins operation.

125. Please state the average and peak capacity for each treatment unit process and equipment item, and how processing wastewater will be managed during downtime of key equipment items.

BACKGROUND

AFC section 3.4.8.4.3 indicates that HRSG make-up water will use RO product water with less than 10 ppm TDS, polished by an onsite demineralization system. Reducing a 400ppm influent TDS to less than 10 ppm is a 97.5% RO rejection rate.

DATA REQUEST

126. Section 3.4.8.2 says that the PGWWTP tertiary effluent is projected to have 15 ppm silica, 7 ppm ammonia, and an unknown level of soluble silica, bicarbonate, and nitrate. A literature search indicates that RO systems historically achieve 92 to 95% TDS rejection rates, but soluble silica, ammonia, bicarbonate, and nitrate commonly have much lower rejection rates.

a. Please explain the basis for the assumed 97.5% TDS rejection rate.

b. Please describe how soluble silica, ammonia, bicarbonate, nitrate, sodium, chloride, oxygen, phosphate, and other constituents will be reduced to and maintained at the levels required in the HRSG condensate.

BACKGROUND

AFC section 3.4.8.4.4 indicates that chlorides will be the limiting component for cooling water treatment. However, neither phosphate, bicarbonate, organic nitrogen, ammonia, or dissolved silica (per SDI analysis) were included in Table 3.4.8-6, and magnesium and boron are high.

DATA REQUEST

127. Please provide the various water constituents addressed by Table 3.4.8-6 and mentioned above for various locations in the water balance. Include the contribution of phosphate, sodium, sulfate, and other scale-forming constituents from the various water treatment chemical additions.

BACKGROUND

Figures B-1 and B-2 show a softening/decarbonation box separate from the Reverse Osmosis box. Figure B-3 shows that there are also other unit processes, such as pressure filters, weak acid cation polishers, cartridge filters, and RO feed pumps that are not shown on B-1 and B-2.

DATA REQUEST

128. Please show each of the water treatment unit processes and pumps on Figures B-1, B-2, and B-3.

BACKGROUND

AFC section 3.4.8.5.4 describes how evaporative cooling will cool the inlet air stream using RO product water with an estimated two cycles of concentration. The mass and heat balances shown in Figures A-1 and A-2 indicate the use of dechlorinated potable water, although the potable water silica level is unstated in Table 3.4.8-3.

DATA REQUEST

129. For the appropriate inlet air-cooling water source, how will CTG silica loading be managed at acceptable levels?

130. Discuss in detail the potable water requirements for this use, the source of this water, and a project design that uses recycled water for this purpose.

BACKGROUND

AFC section 3.4.12 states that the 360,000 gal Fire Water Storage Tank will be filled with potable water.

DATA REQUEST

131. Please define how a chlorine residual will be maintained in the Fire Water Storage Tank if there is no make-up flow.

BACKGROUND

Section 3.11.5.1 dismisses mixing the REF discharge stream with the PGWWTP effluent because the REF discharge temperature is said to be too high and Pleasant Grove Creek is said to be effluent dominated.

DATA REQUEST

132. Confirm that any REF wastewater discharge stream(s) will not be mixed with the PGWWTP wastewater discharge under any circumstances.

133. If any REF wastewater discharge(s) will be mixed with the PGWWTP wastewater discharge, define any pretreatment requirements, the temperature requirements for the PGWWTP discharge and if exceeded by REF effluent, estimate the cost of supplemental cooling.

BACKGROUND

The construction of the REF will require a grading plan that moves up to 70,000 cubic yards of material with the addition of 40,000 cubic yards of new clean fill material to raise the overall site, provide a gentle slope for drainage, and provide level pads on which to build the structures of the REF. Such grading plans and building construction will alter the existing soil cover to a cover dominated by engineered fill material and impervious surfaces. The alteration of the surface cover will influence site infiltration and therefore impact stormwater runoff conditions.

DATA REQUEST

134. What are estimated infiltration rates for the new engineered-fill surface cover for the REF? Are these infiltration rates expected to change over time either due to increased vegetation, surface pore sealing, or by other processes? How do these infiltration rates compare with existing conditions?

    a. What is the net fraction of impervious surface of the designed REF?

    b. What are design runoff volumes and peak flows for the designed REF site for 24-hour storms of various frequencies (100-, 50-, 10-, 5-, 2-year)? How do these flow volumes and peaks compare to runoff conditions for the existing land use?

BACKGROUND

It is understood that with anticipated development and changes in the land-use of the western Roseville area, increases in runoff may require the need for additional flood management approaches or facilities along Pleasant Grove Creek.

DATA REQUEST

135. Describe in detail how the runoff from the proposed REF project has been considered in terms of cumulative runoff increases associated with the development of the western Roseville region with associated changes in the area's General Plan? Are increases in runoff from the proposed REF project considered significant in light of cumulative runoff impacts in the region associated with planned or proposed development?

BACKGROUND

AFC figures 3.1-1 and 3.1-2 provide a general site plan for the REF. Item 16 of the plan key is identified as a stormwater retention pond. This feature is located along the eastern side of the REF site. Item 20 of the key is identified as a stormwater detention basin. However, item 20 is not identified in the plan.

DATA REQUEST

136. Please verify and identify the existence and location of Item 20 (stormwater detention basin).

BACKGROUND

In AFC section 3.5.7 the stormwater detention pond is described to be designed to detain the first 0.5 inch of stormwater runoff for settlement and/or biological uptake, with release to Pleasant Grove Creek over a 72-hour period. It is also stated that stormwater in excess of the first 0.5 inch will be discharged to Pleasant Grove Creek. Following this in Section 3.5.8 it states that the stormwater drainage system will be sized to accommodate a 10-year storm event.

DATA REQUEST

137. Please describe the design process utilized to size the stormwater detention basin. As explained above, it is uncertain whether the detention basin was sized to contain the 0.5 inch runoff volume or the 10-year event volume? Are these two volumes one and the same? Describe how the runoff in exceedence of the first 0.5 inch will discharge directly from the detention basin to the tributary creek?

BACKGROUND

AFC section 3.4.8.5.5 describes that wastewater occurring from equipment washdown, truck unloading pads, and chemical containment areas will first be sent to an oil/water separator, and then this underflow will then be sent to the zero discharge system. This is presumably only a small fraction of the total stormwater, so the overall site stormwater calculations may not need to be adjusted.

DATA REQUEST

138. Please provide a figure that distinguishes the area of the project where wastewater runoff will be routed to the zero discharge system, and areas of the project where runoff will be routed to the stormwater detention pond.

139. Please clarify if current plans for managing stormwater during plant operations include routing stormwater from process areas into the oil/water separator and wastewater storage tank, allowing retention and tests for adequate quality, before transferring it to the Wastewater Treatment facility. Explain how the proposed treatment unit processes would deal with high oil levels? Will there be floating oil adsorbant booms to remove oil from the stormwater in the detention basin?

BACKGROUND

In Appendix C of the AFC, Section 3.3.2.3 on Stormwater Drainage, a general statement claims that stormwater pipes will discharge runoff to the nearest open creek, swale, or channel.

DATA REQUEST

140. Does this statement reflect how runoff from the project site shall be routed on-site, or does this address how runoff will be discharged from the detention basin? Please verify that all stormwater will be routed to the stormwater retention pond or other engineered retention structure prior to discharge.

BACKGROUND

141. As part of the Federal Clean Water Act (regulated under the National Pollutant Discharge Elimination System) and administered locally in California by the State Water Resources Control Board (SWRCB) and more specifically by the Central Valley Regional Water Quality Control Board (CVRWQCB), the project applicant will most likely be submitting a Notice of Intent (NOI) and applying for a General Construction Activity Storm Water Permit prior to initiating construction and a General Industrial Stormwater Activity Permit prior to any operation of the proposed facility. The General Permit requires the implementation of a Storm Water Pollution Prevention Plan (SWPPP), which must be prepared before construction begins.

DATA REQUEST

142. Please provide information regarding how the SWPPP shall include site-specific conditions and modifications necessary to accommodate the power plant. This might

include best management practices (BMPs) or other structural approaches which are specifically designed for the REF site to prevent, minimize, and treat polluted stormwater assuring that no hazardous material pollutants are discharged into the unnamed tributary of Pleasant Grove Creek during the construction and operation of the proposed facility. In addition to oil, please describe any other potentially polluting materials that may come in contact with storm water, and the post construction BMPs (PCBMPs) that will be employed to remove the pollutants prior to discharge. Provide chemical name and toxicity expressed as the LC50 (lethal concentration) and LD50 (lethal dose) of chemicals used onsite, the maximum amount used, and use scenarios.

143. Please describe how the SWPPP will define a stormwater monitoring quality program? Which monitoring parameters shall be used and what frequency of monitoring shall be proscribed? How will the effectiveness of the oil-water separator be evaluated and maintained. In addition, please identify procedures to be followed in the event that stormwater monitored in the stormwater management basins exceeds allowable discharge limits.

144. If the stormwater detention basin is only serving to detain stormwater, please explain how the quality of stormwater from Non-Process Areas will be monitored prior to release into the un-named tributary of Pleasant Grove Creek.

145. Please provide water quality data estimating water quality conditions of stormwater runoff that will be discharged from the detention basin into the unnamed tributary of Pleasant Grove Creek.

BACKGROUND

The water balance diagrams in AFC Appendix B (Figures B-1 and B-2) indicate that flows with the potential for oil contamination will be directed to an oil/water separator and ultimately into the wastewater tank and treatment system.

DATA REQUEST

146. Please provide a detailed site map of the area showing existing site improvements (paving, gravel, graded areas, storm drain systems, discharge points, etc.), any proposed improvements, and the layout for the proposed wastewater storage area.

147. Neither the water balance flow diagrams nor the site grading and drainage plan provide adequate detail to show how the potentially oily process and stormwater waters are separated from other runoff. Please show the oil/ water separator on the Site Grading and Drainage Plan. If the oily process and storm water are conveyed through a separate system, please show the system. In addition, please provide a detailed site plan showing how the waters are separated.

BACKGROUND

The REF project site occupies a stream terrace south of Pleasant Grove Creek. Current Federal Emergency Management Agency (FEMA) mapping of the 100-year floodplain is shown in Figures 3.3-1 and 3.3-2. The project site is located outside of the current FEMA floodplain. Although a floodplain map is available, modeling estimates for surface water elevations along Pleasant Grove Creek for design magnitude storm events such as the 100-year flood event are not currently available from FEMA as indicated in the AFC. The AFC states that based on regional studies of proposed master plans for the western Roseville area, the northern portion of the site may in the future be within the FEMA 100-year floodplain. Soils in the project area, including soil type 194 (Xerofluvents) indicate a history of past flood inundation, although no specific flood dates for the project site were provided in the AFC.

Acknowledging that the proposed project site occupies a historic stream terrace formed by flood processes, soil evidence indicates past inundation, and future regional land uses may alter the mapped FEMA 100-year floodplain to include a portion of the project site, a more thorough understanding of the potential flood risk at the project site is necessary. The proposed project includes a grading plan to raise the surface of the project site 1-3 ft to offer additional flood protection and a suitable building surface.

DATA REQUEST

148. Please provide detailed hydrology and hydraulic information including estimates of surface water elevations along Pleasant Grove Creek and the unnamed tributary immediately east of the project during 100-year storm conditions and verify that the existing and proposed facilities are adequate to protect the site from the 100-year storm event (as required by the NPDES Permit). Hydraulic calculations should be prepared using Water Surface Pressure Gradient program (WSPG)or equivalent programming pursuant to local agency requirements and should evaluate the entire system (inlets, junction structures, friction losses, etc.)

BACKGROUND

In addition to the SWPPP, an Erosion Control and Sedimentation Plan (ECSP) will be needed to address potential erosion due to construction activities at the REF, lay-down and staging/storage areas, and along associated project linears such as transmission lines, gas pipeline, etc. The purpose of the ECSP is to minimize the area disturbed, to protect disturbed and sensitive areas, to retain sediment on-site and to minimize off-site effects of stormwater runoff.

DATA REQUEST

149. Please identify site-specific erosion and sediment control measures and Best Management Practices (BMPs) that will be implemented during project construction and operation. In addition, please identify any BMPs potentially necessary to address Nationwide Permits and maintenance and monitoring efforts required for all erosion control measures. Describe how disturbed area will be revegetated. Describe any grading or excavation that will be needed (eg depth of cut, amount of fill, source of fill material, location of BMPs such as culverts if road is bermed, and the types of any geotextiles. Please provide information on roads and laydown areas; final surface,

drainage, what BMPs, and which road segments will be restored after construction, and revegetation.

BACKGROUND

Runoff from the project site will be routed to the un-named tributary channel east of the project site (through a detention facility) potentially resulting in increased flows to the tributary.

DATA REQUEST

150. What is the current geomorphic condition of this tributary in regard to erosion and channel incision? Will the contribution of additional flows as a result of the project increase channel erosion and sediment yield to Pleasant Grove Creek downstream?

151. What design considerations were made to prevent increased erosion in this tributary channel? What type of outfall design shall be utilized for the discharge from the detention basin into the tributary creek? The AFC states that pipes shall be used, but is this in combination with a weir structure or an in-stream diffuser?

152. What is the estimated sediment trapping efficiency of the detention basin and what proportion of the sediment load from project site runoff will continue on to the tributary and Pleasant Grove Creek below? How will the detention basin be maintained in regard to sediment accumulation?

BACKGROUND

During construction the accidental spill of fuels, oils, and lubricants can potentially harm surface and groundwater resources in the project area. During construction, off-site storage and lay-down areas on adjacent properties to the project site may generate erosion or pollution that may drain into Pleasant Grove Creek or one of its tributaries.

DATA REQUEST

153. What structural controls, treatment controls, or plans will be used to prevent spilled fuel, lubricants, and other potentially polluting materials from entering groundwater or surface water pathways?

154. What measures (to be outlined in the Construction SWPPP) will address potential impacts arising from construction on the temporary project parcels? Please confirm whether the offsite storage area is covered under the existing SWPPP regulated under the NPDES Industrial Permit, or the site specific NPDES general construction permit.

BACKGROUND

Construction laydown areas are described as areas with temporary impacts, however, since the laydown sites is substantially graded, the impact to vernal pools/swales could likely be permanent.

DATA REQUESTS

155. Provide information on current drainage and hydrology in the construction laydown area. Will grading change drainage toward vernal pools? Please describe mitigation measures that would lessen the impacts.

BACKGROUND

In footnote 7, Table 3.4.8.1, the cooling tower drift loss is 0.0005%. This is below what is commonly guaranteed by cooling tower manufacturers for their standard tower designs. No cooling tower plume model was provided to predict drift fallout. The proposed N-S orientation of the tower is perpendicular to the prevailing summer wind and may cause significant air recirculation, which will reduce cooling efficiency and output.

DATA REQUESTS

156. The cooling tower drift loss is projected at 0.0005%. Please provide a cooling tower manufacturer's recommendation of features needed to reliably achieve this low drift loss. At the minimum, the following should be defined; drift eliminator (configuration, impingement area, fill separation, fit around structural members), fan speed control, vertical airflow rate, and water loading rate. Will drift loss be confirmed by a CTI (Cooing Tower Institute) standard procedure such as ATC-140?